

REMARKS

Claims 1-22 were pending in the application. Claims 1-7 were amended, and claims 8-22 were newly presented in the response filed on January 5, 2007. Claims 1, 11, 12, and 22 have been amended, and new claim 24 has been added by this supplemental response. Support for new claim 24 can be found, for example, in Figs. 2 and 3 and on page 6 of the specification. Applicants request examination of claims 1-23, including independent claims 1 and 12 and dependent claims 2-11 and 13-24.

Summary of Interview

Applicants thank the Examiner for the courtesy extended during the personal interview held between Applicants' representative, Elizabeth Burke, and Examiners Shaffer and Robert on January 23, 2007. During the interview, the claims amended and newly presented in the response of January 5, 2007 were discussed.

During the interview, Applicants' representative expressed the belief that Jacques does not disclose a screw having a cavity configured to receive a ring in a snap-on configuration. Examiner Shaffer maintained the position that Jacques does disclose a ring configured to receive a ring in a snap-on configuration, but agreed to further consider the English-language translation of Jacques that Applicants submitted with the response of January 5, 2007. Applicants' representative also argued that there was no motivation to modify Jacques as proposed in the Office Action of July 7, 2006, and to do so would destroy the functionality of Jacques. Examiners Shaffer and Robert

invited Applicants' representative to submit a supplemental response providing more detailed remarks regarding the cited references and pending claims.

§103 Rejection of Claims 1-7

Claims 1-7 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Jacques (French Patent No. 2 801 492) in view of Vignaud et al. (U.S. Patent No. 5,176,680) and further in view of Schlapfer et al. (U.S. Patent No. 5,501,684). Claim 1 is currently amended to correct minor informalities.

The Examiner alleges that Jacques discloses each of the elements of the previously presented claims except that Jacques does not disclose lateral undercuts, a ring placed along the pin, and a cavity capable of securing the pin with a ring about it. The Examiner states that Vignaud discloses a similar device including a split ring (9), clamping means (7, 8, and 18) and lateral undercuts. The Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Jacques with the split ring and lateral undercuts.

Applicants traverse the rejection of claims 1-7 as being unpatentable over Jacques in view of Vignaud and further in view of Schlapfer. To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the Examiner bears the burden of establishing each of three requirements. First, the references must teach or suggest each and every element and limitation recited in the claims. See M.P.E.P. § 2143.03. Second, the Examiner must establish that some suggestion or motivation exists, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references to achieve the presently claimed invention. See

M.P.E.P. § 2143.01. Third, the Examiner must establish a reasonable expectation of success for the proposed combination. See M.P.E.P. § 2143.02.

Neither Jacques nor Vignaud discloses each and every limitation of claim 1, either alone or in combination. Claim 1 recites “at least one screw for anchoring the pin to the vertebrae, each screw including: a head that delimits a cavity for receiving the pin; at least one ring having a substantially-spherical outer surface and an inside diameter allowing sliding engagement on the pin; and wherein the head of each screw is shaped so that the cavity that the head delimits may receive the at least one ring with snap-on installation.” Neither Jacques nor Vignaud discloses a screw and ring “wherein the head of each screw is shaped so that the cavity that the head delimits may receive the at least one ring with snap-on installation.”

Applicants’ disclosure provides a cavity “so that each ring 5 may be engaged and held inside the cavity 10 by snap-on installation.” Page 5 of application. The snap-on installation allows the ring and the pin held by the ring to be secured to a screw while allowing continued angular mobility of the ring and the pin with respect to the screw as other screws are placed or other aspects of a surgery are performed. Once a surgeon determines that the pin is appropriately positioned, a cap 15 can be placed over the cavity and “tightening of the rings 5 by means of the lateral screws 14 and the included walls of the conical apertures 17 of the cap 15 allows a complete immobilization of the pin 2 with relation to the screw...” Page 6 of application.

Jacques does not provide a snap-on configuration. Jacques discloses screws that can be anchored to a rod through two projecting sides 10 defining a channel between them. Page 4, paragraph 2 of Jacques translation. These projecting sides are

slightly flexible, "so that when brought closer together, they can clamp in place the rod 5 which is engaged between them." Page 4, paragraph 2 of Jacques translation. The fact that the sides must be brought closer together in order to clamp on to the rod indicates that the sides do not clamp the rod upon insertion, i.e., there is no snap-fit installation configuration.

Jacques differs from Applicants' claimed invention because Jacques does not provide a cavity and ring configured provide a snap-on configuration. Rather, in order to secure the rod, Jacques provides wires that "provisionally hold the support rod in this position to provide an opportunity to verify whether the conformation of this rod is correct." Page 2, paragraph 5 of Jacques translation. Further, after the rod is appropriately positioned, a clamp is placed over the rod and projecting sides to bring the projecting sides closer together and clamp the rod in place. The clamp includes lateral arms, and "the entire assembly is shaped so that these lateral arms displace the sides 10 so they come closer together when the bracket 7 is moved toward the head 6b as a result of the tightening these screws 16." Page 5, paragraph 1 of Jacques translation. Until this clamp is in place, the side walls do not hold the rod in place like the snap-on installation of Applicants' disclosure, and therefore, the channel formed by these projecting side walls cannot engage a rod by snap-on installation.

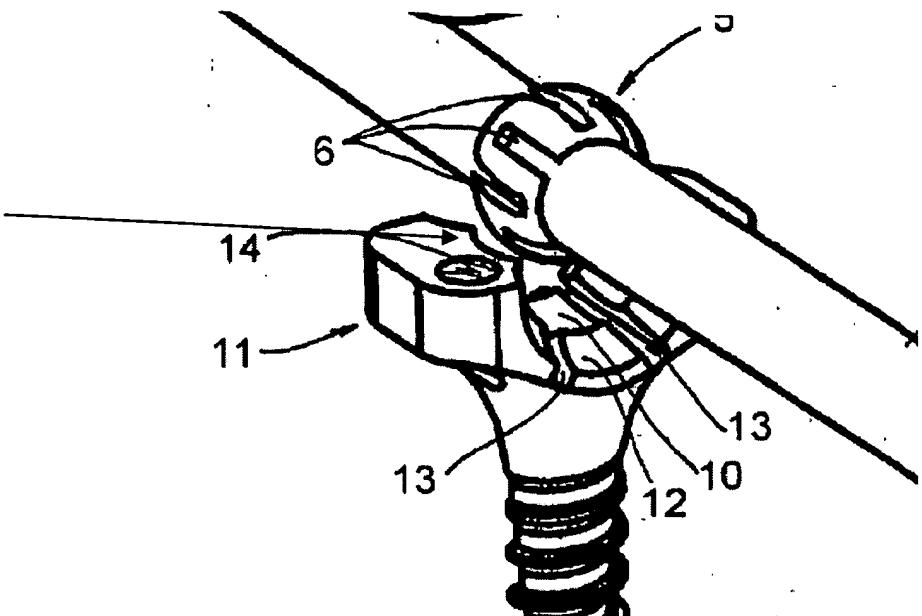
In addition, there is no reasonable expectation of success using the combination of Jacques and Vignaud because the device of Jacques could not suitably secure the ring of Vignaud. As noted above, Jacques discloses two projecting sides (10) that can be clamped onto a rod by bringing the sides closer together with a bracket (7). The ring

of Vignaud cannot be combined with the side walls of Jacques because the side walls of Jacques, although suitable for securing a rod, would not be suitable for securing a ring.

In addition, modifying Jacques' screw to include a screw head (4), as provided by Vignaud, would not provide a snap-on configuration. Vignaud provides a locking screw (7) that is secured over a ring to secure a ring and rod within a screw head formed by cylindrical side walls (4a, 4b). However, unlike Applicant's invention, which includes a snap-on configuration to "provisionally hold the support rod in this position to provide an opportunity to verify whether the conformation of this rod is correct," the ring and/or rod of Vignaud are not held in place until the locking screw (7) is screwed into a top, threaded portion of the screw head.

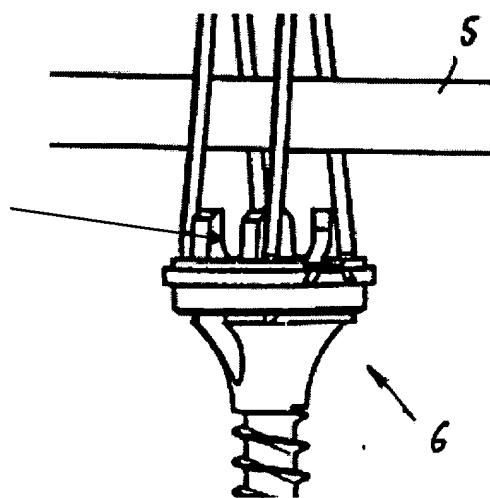
Applicants' claimed cavity provides a spherical segment that engages the spherical outer surface of a ring. This spherical configuration provides an advantage in that it allows angular movement of the rod with respect to a screw until the cap 15 is placed on the assembly. The partially spherical surface of the cavity will secure the ring in the cavity (via snap-on installation), preventing the ring from sliding in the cavity in a direction along an axis of a rod secured therein, as shown in Fig. 3.

Curved surface wraps around ring to hold ring and prevent ring from sliding in a direction along ring axis.



In contrast, the cavity of Jacques is formed by projecting sidewalls that have surfaces that are parallel to a surface of a rod. These surfaces, being parallel to the rod surface, will not surround a ring, such as the ring taught by Vignaud, to both allow angular adjustment of a rod and to prevent the ring from sliding out of the cavity in a direction along an axis of the rod. Further, Vignaud also does not disclose or suggest the use of a cavity configured to receive the rod in a snap-on manner.

A ring held here could slide along rod axis since projections do not curve around ring or rod in a direction along length of the rod.



Therefore, because neither Jacques nor Vignaud discloses a cavity configured to receive a ring by snap-on installation, and because the channel of Jacques would not suitably secure a ring, the combination of Jacques and Vignaud is improper, and the rejection of claims 1-7 under 35 U.S.C. § 103(a) should be withdrawn. Further, because claims 8-11 properly depend from claim 1, Applicants request allowance of claims 8-11.

Claims 8-24

As noted previously, claims 8-22 were added by the amendment of January 5, 2007, and new claims 23-24 are added by this supplemental amendment. Claims 8-11 depend from independent claim 1 and are allowable for the same reasons as claim 1, set forth above.

Claims 12 and 22 are currently amended. Independent claim 12 provides a pin, at least one ring configured to engage the pin, and at least one screw having a cavity configured to receive the at least one ring and having a partially spherical contour. Claim 12 further includes “at least one cap having an aperture configured to contact and secure the at least one ring within the cavity, the aperture delimited by inwardly inclined side walls in a cross-section along a first axis of the cap.”

None of the references cited in the Office Action disclose a cap having an aperture with inwardly inclined side walls that will allow a ring to be locked in place. The combination of a cavity having a spherical contour configured to receive a ring, along with a cap including an aperture delimited by inwardly inclined side walls in a cross-section along a first axis of the cap, provides a number of advantages. For example, as noted previously, the partially spherical cavity allows the ring and rod to be angularly adjusted during a surgical procedure. Further, once a surgeon determines that the rod

is appropriately positioned, the ring can be locked in place using the cap, thereby preventing further movement of the rod. "The inclined walls of the conical apertures 17 of the caps 15 allows a complete immobilization of the pin 2 with relation to the screw to be ensured...whatever the angular orientations of the rings 5 in the cavities 10 and the orientation of the pin 2 with relation to the screw 4." Page 6 of application. None of the cited references disclose these claim limitations, and for at least these reasons, pending claims 12-24 are patentable over the prior art of record.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: Elizabeth M. Burke
Elizabeth M. Burke
Reg. No. 38,758